**Running BEAPP through a computer cluster: A guide**

**(LCN specific)**

**Register for an O2 account:**

<https://rc.hms.harvard.edu/>

If you don’t have a HMS account, you’ll need to do that first

**Set up:**

Instructions for connecting to O2: <https://wiki.rc.hms.harvard.edu:8443/display/O2/How+to+login+to+O2>

If you’re using windows, you’ll need to install MobaXterm

<https://mobaxterm.mobatek.net/>

Under the ssh tab, enter [yourecommons@o2.hms.harvard.edu](mailto:yourecommons@o2.hms.harvard.edu) (select don’t specify username, and select port 22)

Once you’re connected, run the command run the command: module load matlab/2017a

**Transferring data:**

Use FileZilla (or winscp) to transfer beapp + batch script to your home directory

<https://wiki.rc.hms.harvard.edu/display/O2/File+Transfer>

**Uploading your data**

Recommended to transfer your files to /n/scratch2, where speed is faster and you have more room

In FileZilla, go to site manager, and under the advanced tab, set your default remote directory to /n/scratch2

In scratch2, make a personal folder and upload your data there

**Running beapp**

**Beapp settings**

Set your user inputs in your personal computer, then transfer the user inputs to your beapp on the cluster by uploading the user\_inputs folder to the beapp in your home directory

OR

Change your settings in the computer cluster by cd’ing into the user\_inputs folder and using the vi editor. To edit, for example, beapp\_userinputs.m, run “vi beapp\_userinputs.m” to open the file in the vi editor. From there, pressing the “I” key will make the script editable, and pressing escape and then “:wq” will save and quit the editor (:q! to quit and override changes, :q to quit if no changes have been made).

**Running batch script**

Run batch script with the command

sbatch --array=1-sizeofyourbeapp\_file\_input\_table beapp\_parallel\_jobs.sh

**Batch script settings**

Setting batch script settings: https://wiki.rc.hms.harvard.edu/display/O2/Using+Slurm+Basic

If using a PC, I recommend notepad++ to edit jobs script

You will need to set # of cores, amount of time, and RAM memory for your run. If your run goes over the time or memory you set, it will be cancelled, so make sure to set these a little higher than what you expect your run to use.

Choose your partition (short, medium, long) based off of how long the job will take (see link for allowed amounts of time for each partition)

Only use priority if you're running < 3 jobs (don't use to run jobs in parallel)

If you set your # cores to be lower than what beapp wants to use, it will not cancel the run, but beapp will be restricted to use fewer cores. That said, the more resources you ask from the cluster, the longer it will take your jobs to queue. So do your best to estimate how long your run will take per file, and set these carefully.

To learn what resources your previous runs used, use the command O2sacct

Note: allocating more resources for a run will not speed it up (unless you set the number of cores too low for the ICA module).

If you're running off of data in n/scratch2, you must add the command #SBATCH --constraint="scratch2"

**Running Interactively**

Before running as a batch script, it's recommended to run as an interactive session

https://wiki.rc.hms.harvard.edu/display/O2/Using+MATLAB

srun --pty -p interactive -t 60:00 matlab

Test your user inputs here, because the batch script will hide the error reports (it will only say whether or not the run ran into an error)

*Note: there’s an intro to O2 2 hour class happening 02/13/201 from 2-4, more details + registration here: phttps://wiki.rc.hms.harvard.edu/display/O2/User+Training*

**Running modules that require python packages (fooof, pac, bycycle)**

<https://wiki.rc.hms.harvard.edu:8443/display/O2/Personal+Python+Packages>

**Set up a virtual environment**

module load gcc/6.2.0

module load python/3.6.0

virtualenv nameyourenvhere

source nameyourenvhere/bin/activate

pip install fooof

pip install pactools

pip install bicycle

Whenever you open a new session, to use the python packages, you’ll need to run

source nameyourenvhere/bin/activate

only!